

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended) A multiplexer comprising:

- a first input;
- a first channel coupled to the first input;
- a second input;
- a second channel coupled to the second input; and
- an output coupled to the first and second channels, wherein the first and second channels can be selected as active or inactive, and wherein a coupling capacitance of only an inactive one of the first and second channels is not coupled directly to the output.

2. (original) The multiplexer of claim 1 wherein the first channel comprises:

- a first input differential amplifier (DAF) coupled to the first input; and
- a first plurality of transistors coupled between the first DAF and the output.

3. (original) The multiplexer of claim 2 wherein the second channel comprises:

- a second input differential amplifier (DAF) coupled to the second input; and
- a second plurality of transistors coupled between the second DAF and the output.

4. (original) The multiplexer of claim 1 which includes a non-inverted select input for activating the first channel and inactivating the second channel and an inverted input for inactivating the first channel and activating the second channel.

5. (original) The multiplexer of claim 3 wherein the first plurality of transistors are turned off when the first channel is inactive.

6. (original) The multiplexer of claim 5 wherein the second plurality of transistors are turned off when the second channel is inactive.

7. (new) The multiplexer of claim 1 wherein when the first channel is selected to be active, the second channel is selected to be inactive, and when the second channel is selected to be active, the first channel is selected to be inactive.

8. (new) The multiplexer of claim 3 which includes a non-inverted select input for activating the first channel and inactivating the second channel using at least one of the first plurality of transistors, and an inverted input for inactivating the first channel and activating the second channel using at least one of the second plurality of transistors.

9. (new) A multiplexer comprising:  
a first input;  
a first channel including a first input differential amplifier coupled to the first input,  
and a first plurality of transistors coupled to the first input differential amplifier;

a second input;

a second channel including a second input differential amplifier coupled to the second input, and a second plurality of transistors coupled to the second input differential amplifier; and

an output coupled to the first and second plurality of transistors, wherein a selection input provided to the first and second plurality of transistors connects either the first channel or the second channel as active for output, such that a coupling capacitance of only the inactive one of the first and second channels is not coupled directly to the output.

10. (new) The multiplexer of claim 7 wherein the selection input includes a non-inverted select input for activating the first channel and inactivating the second channel, and an inverted input for inactivating the first channel and activating the second channel.

11. (new) The multiplexer of claim 10 wherein at least one of the first plurality of transistors is turned off when the first channel is inactive, and wherein at least one of the second plurality of transistors are turned off when the second channel is inactive.

12. (new) The multiplexer of claim 11 wherein at least one of the first plurality of transistors is coupled to the collectors of transistors of the first differential amplifier, and at least one of the second plurality of transistors is coupled to the collectors of transistors of the second differential amplifier, wherein the at least one of the first plurality of transistors coupled to the collectors of the transistors of the first differential amplifier are coupled to the output, and wherein the at least one of the second plurality of transistors coupled to the collectors of the transistors of

the second differential amplifier are not directly coupled to the output, such that the coupling capacitance of the second different amplifier is not directly coupled to the output when the second channel is inactive.

13. (new) The multiplexer of claim 12 wherein the at least one of the second plurality of transistors coupled to the collectors of the transistors of the second differential amplifier are coupled to a voltage source  $V_{cc}$ .

14. (new) The multiplexer of claim 12 wherein at least one of the second plurality of transistors is coupled to the collectors of transistors of the second differential amplifier, and at least one of the first plurality of transistors is coupled to the collectors of transistors of the first differential amplifier, wherein the at least one of the second plurality of transistors coupled to the collectors of the transistors of the second differential amplifier are directly coupled to the output, and wherein the at least one of the first plurality of transistors coupled to the collectors of the transistors of the first differential amplifier are not directly coupled to the output, such that the coupling capacitance of the first different amplifier is not directly coupled to the output when the first channel is inactive.

15. (new) The multiplexer of claim 14 wherein the at least one of the first plurality of transistors coupled to the collectors of the transistors of the first differential amplifier are coupled to a voltage source  $V_{cc}$ .